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Drawings (2 sheets) attached.

COMPLETE SPECIFICATION.

"INVALID BED-CHAIR."

We, JOHN MOFFATT BROUGHTON, Retired, of High Street, Road, Mount Waverley, in the State of Victoria, and WESLEY ERNEST WEEKS, Manufacturer, of 15 Chislehurst Road, Hampton, in the said State, Commonwealth of Australia, hereby declare this invention and the manner in which it is to be performed, to be fully described and ascertained in and by the following statement:-

This invention relates to a bed-chair for invalids and is more especially intended for use as an aid to the nursing of invalids in the home.

An object of this invention is to enable a bed to be converted very readily and with little effort into a chair, and vice versa, without any necessity for the patient to be lifted otherwise than by the movement of the parts of the bed-chair during such adjustment.

Another object of the invention is to provide a bed-chair which can be moved easily from one room to another, and a further object is to

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enable a bed-chair to be set in any desired one of several positions which are in between the positions for lying and for sitting.

These objects are achieved by this invention.

Hereinafter the portion of the bed-chair which in the chair-position forms the seat will be termed the "seat", while the portion which in that position forms the back-rest of the chair will be termed the "back-rest", and the portion which in that position forms the foot-rest of the chair will be termed the "foot-rest"; but, unless the contrary is clear from the context, the position of the parts will be described in that position of the bed-chair where it functions as a bed.

One feature of this invention consists of a bed-chair having a chassis frame on which the front portion of the frame of the back-rest and the front portion of the frame of the seat are pivotally supported, and in which a member rigidly connected to the frame of the back-rest and depending near the front portion of the latter is linked to another member depending from and rigidly connected to the frame of the foot-rest, or to foot-rest carrier means, so that when the back-rest is tipped upwardly the foot-rest, or foot-rest carrier means, tips downwardly in synchromism, means being provided to effect at the same time a sliding movement of the rear of the seat in relation to the back-rest so as to produce a slight automatic tipping of the seat, and means being provided to lock the back-rest when in a raised position.

According to another feature of this invention, this slight automatic tipping of the seat is effected by providing the front end of the frame of the back-rest with integral extension members on which the rear end of the frame of the seat rests in such a way that it can slide thereon during the operation, or during portion of the operation, of adjusting the bed-chair from one position to another.

Preferably, the foot-rest is made in two main parts, namely foot-rest carrier means and an upper foot-rest frame which can be carried thereby and allowed to move automatically therewith but which is provided with means whereby it can be set so that it remains in the horizontal position when the foot-rest carrier member is lowered, or so that it is inclined less than the foot-rest carrier member.

The accompanying drawings show the preferred specific construction of the bed-chair.

In these drawings -

Figure 1 is a perspective view of the bed-chair in the position where it functions as a chair;

Figure 2 is a perspective view of the bed-chair in the position where it functions as a bed;

Figure 3 is a rear view looking somewhat downwards and side-

ways in the chair-position, and with portion of the bed-chair cut away;

Figure 4 is a side elevation of the bed-chair in the chair-position;

Figure 5 is a side elevation of the bed-chair in the bed-position, and with portion of the back-rest frame cut away;

Figure 6 is a sectional side elevation mainly showing the foot-rest;

Figure 7 is an inverted view of the table;

Figure 8 is a view looking upwardly and from the side of the front portion of the bed-chair in the bed-position, and

Figure 9 is a view of part of the underside of the back-rest, and associated parts, in the bed-position.

The preferred specific construction of the invention and its manner of operation will now be described.

The frame of the bed-chair may be formed mainly of 7/8" chrome plated tubular steel. On each side at a position below the main frame of the bed-chair a side portion 1 of a chassis is provided. Preferably the rigid connections of the frame are effected by welding but, while the welding together of parts of the frame is mentioned in connection with this preferred construction, a rigid connection could, of course, be achieved by other well-known means. The two side portions of the chassis are connected by cross rods 2 of tubular steel welded thereto. The two rear cross rods 2 are joined by an inclined rod 2A. The chassis also includes on each side two upright supports 3 rigidly connected to it. To a pair of fulcrum members 4, which are welded to the side portions 1 of the chassis adjacent to the upper ends of each of the rear pair of these supports 3, are pivoted the lower ends of a pair of members 5 depending from the front portion of the frame 6 of the back-rest and welded thereto, and to another pair of fulcrum members 7, which are welded to the side portions 1 of the chassis near to the upper ends of the front pair of these supports 3, are pivoted a pair of members 8 depending from the front portion of the frame 9 of the seat and welded thereto.

Four angle iron bars 10 are welded to the underside of the frame 6 of the back-rest, as shown especially in Figure 3, and between the middle pair of these bars a rod 11, notched at 18, is pivoted at 12. The rod 11 extends telescopically into a tube 13 having an offset lug 14 pivoted at 15 to a lug 16 offset from the lower rear cross rod 2. A hand operated clamp 17 carries a locking pin (not shown) into and out of engagement with one or other of the notches 18, as desired when adjusting the back-rest and fixing it in position. A weight-compensating spring 19 connects the forward end of the middle angle irons 10 to the lower rear cross rod 2. This spring lightens the effort of moving the back-rest.

The front ends 10A of the angle irons 10 extend forwardly for a short distance beyond the back-rest to support the rear end of the seat (see Figure 5). To the front ends of the middle angle irons 10 to a depending bar 19A is welded and the lower end of this bar is pivotally connected by a link 20 and nut 21 to a member 22 pivoted to the lower end of a lug 23 welded to a carrier member 24 which comprises two rods welded at their rear ends to a hinge member 25 which pivotally connects them to the front end of the frame 9 of the seat and welded at their front ends to a plate 26 on which rests a cross bar 27A of the upper frame 27 of the foot-rest. The upper frame 27 of the foot-rest is hinged at 28 (Figure 8) to the front end of the frame 9 of the seat. Consequently, adjustment of the back-rest to a raised position draws down the carrier member 24 to an inclined position, and the upper frame 27 of the foot-rest also passes down with the carrier member. This movement of the back-rest also lowers the angle irons 10 above-mentioned, thus causing the rear end of the frame 9 of the seat to fall. At first the rear end of the seat frame rests on the ends of the angle-irons 10 but finally this rear end engages stop cushions 29 (Figure 4) on the chassis frame 1. The chassis is provided with swivel castor wheels 30, 31. The front castor wheels 30 are of the type which are carried by arms 43 (Figure 4) pivotally connected at 44 to a pivoted castor frame 45 and connected also to the castor frame by a spring 46. The rear castors 31 are of the type provided with foot-operated brakes 47. The back-rest, seat and main foot-rest are provided with slightly upstanding side rails 32 to hold the mattress in position against lateral movement. The back-rest and the foot-rest at their extreme ends are provided with upstanding members 32A for the same purpose. The upper frame of the foot-rest is provided with supporting links 33 pivotally connected thereto and passing through a swivel block 34 pivotally connected to the front uprights 3 of the chassis frame. Each supporting link is provided with a series of holes (not shown) adapted to be engaged by a locking pin (not shown) actuated by a hand clamp 35 to lock the frame 27 of the foot-rest in the horizontal position or in any one of several other inclined positions. Consequently, if the carrier member 24 is lowered by raising the back-rest the upper frame 27 of the foot-rest can be retained in the raised position or in one or other of a series of inclined positions above the carrier member but if the locking pins are removed from the holes in the supporting links 33 the frame 27 of the foot-rest moves with the carrier member. This provision of a two-part foot-rest (i. e. an automatically operated carrier member and an upper frame which can move automatically therewith or be independently adjustable to some higher position) is very convenient because in some cases it is desirable for the legs of the patient to be maintained in a horizontal or only slightly inclined position. At the same time

the general arrangement according to this invention by which the upper foot-rest normally moves automatically in synchronism with the back-rest is extremely convenient and enables the bed-chair to be adjusted from one position to another with the greatest of ease even with a heavy and helpless patient.

In addition to the positions where this bed-chair functions as a bed or as a chair, this construction enables the back-rest and foot-rest to be adjusted to a number of intermediate positions - as for example, six intermediate positions. Also, as above-mentioned, the upper frame of the foot-rest can be adjusted to various positions according to the number of holes provided in its supporting link.

The frames of the back-rest, seat and upper foot-rest member may be provided with additional cross rods or other reinforcement. These frames will normally be covered with perforated metal sheets 36 secured thereto. A sponge rubber mattress 37 normally will be used on the bed as this folds readily at the junction of the seat and the main foot-rest.

If desired, the bed-chair may be provided with adjustable arms (not shown) and an adjustable table; for example, - a table 38 (Figures 1, 4 and 7) may be pivotally supported by a U-shaped bar 39 which passes through sleeves 39A and the arms of which fit into sockets 40 welded to the frame and side rails of the seat. The angle of the table may be adjusted by a telescopic member 41 pivotally connected to the table and to an arm of the member 39, a locking clamp 42 being provided so that the table can be set at the desired angle.

A convenient width for the bed-chair is about 2'4" as this allows the bed-chair to pass through any standard door. The bed may be about 6' long or of such other length as is desired. As some patients may require a longer bed or longer chair the front portion 27B of the upper frame 27 of the foot-rest may be carried by rear rods 27C (Figure 6) telescopically slidable in the side members of the frame 27 and secured in position by locking pins (not shown) operated by hand clamps 48. The front portions 27B of the frame is also provided with rods 49 (Figure 8) which are welded to said portion of the frame and are slidable through apertures in the cross rod 27A of the frame.

A handle bar 50 may be provided to facilitate the wheeling of the bed-chair, especially in the chair position, and to facilitate adjustment.

Having now fully described and ascertained our said invention and the manner in which it is to be performed, we declare that what we claim is:-

1. A bed-chair for invalids having a chassis frame on which the front portion of the frame of the back-rest and the front portion of the frame of the seat are pivotally supported, and in which a member rigidly connected to the frame of the back-rest and depending near the front portion of the latter is linked to another member depending from and rigidly connected to the frame of the foot-rest, or to a foot-rest carrier means, so that when the back-rest is tipped upwardly the foot-rest, or foot-rest carrier means, tips downwardly in synchronism, means being provided to effect at the same time a sliding movement of the rear of the seat in relation to the back-rest so as to produce a slight automatic tipping of the seat, and means being also provided to lock the back-rest when in a raised position.

2. A bed-chair for invalids as claimed in Claim 1, in which the front end of the frame of the back-rest is provided with integral extension members on which the rear end of the frame of the seat rests in such a way that it can slide thereon during the operation, or during portion of the operation, of adjusting the bed-chair from one position to another.

3. A bed-chair for invalids as claimed in Claim 1, in which the foot-rest is provided with carrier means adapted to be adjusted automatically by movement of the back-rest and is also provided with an upper frame which is normally supported by said carrier means but has independent adjusting and supporting means so that it can either be carried automatically by the carrier means or can be adjusted to some higher position.

4. A bed-chair for invalids as claimed in Claim 1, in which a weight-compensating spring is provided to facilitate the adjustment of the bed-chair.

5. A bed-chair for invalids as claimed in Claim 1 having a foot-rest substantially as hereinbefore described with reference to the accompanying drawings.

6. A bed-chair for invalids as claimed in Claim 1, having a seat frame and table fitting substantially as hereinbefore described with reference to the accompanying drawings.

7. A bed-chair for invalids as claimed in Claim 1, having means for the adjustment of the back-rest substantially as hereinbefore described with reference to the accompanying drawings.

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